ADBI Working Paper Series

**THE IMPACT OF GOVERNMENT SUPPORT
ON THE PERFORMANCE OF INDONESIA'S
STATE-OWNED ENTERPRISES**

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Abstract

This study analyzes the impact of government support on the financial performance of Indonesia's state-owned enterprises (SOEs). I employ the ordinary least square (OLS) method with firm and year fixed effects in addition to clustered standard errors. The findings show that government support for SOEs does not have a significant effect on their financial performance. This study finds that the government should examine its investment policy to support SOEs and consider designing a proper government support policy to generate higher SOE financial performance.

Keywords: state-owned enterprises, government support, government investment, financial performance

JEL Classification: G32, G38, H54

Contents

1. INTRODUCTION

Governments found state-owned enterprises (SOEs) to attain their targets. A government should declare and develop clearly, as part of its own policy, the targets that SOEs have to achieve. This policy should clarify all the objectives of the government and its policies to achieve good corporate governance of the SOEs based on their code of conduct (Organisation for Economic Co-operation and Development [OECD] 2005).

To encourage SOEs or to fund government projects, the government may provide SOEs with financing directly as part of its investment policy. When financial backing occurs, a supplementary cost budget related to public service obligations should adjust for it (OECD 2014). In 2015, the Government of Indonesia provided direct capital injections reaching Rp64.88 trillion for 43 SOEs (Ministry of Finance of Republic Indonesia 2016). Furthermore, the Indonesian government's ownership of SOEs reached Rp1,762.87 trillion or 32.31% of the total assets in the annual financial statement of the Indonesian government in 2015 (Ministry of Finance of Republic Indonesia 2016).

The previous studies by Li, Su, and Yang (2012); Lee, Walker, and Zeng (2014); Alperovych, Hubner, and Lobet (2015); Guan and Yam (2015); Boeing (2016); and Guo, Guo, and Jiang (2016) focused either on the impact of state assistance on firms' non-financial performance or on the impact of state ownership on companies' financial performance.

This paper examines the relationship between government support and SOEs' financial performance. By employing government support, it provides an extended model to measure SOE performance. My empirical results show that government support for SOEs does not have a significant effect on their financial performance. The results suggest that the government should take into account its support for SOEs and consider alternative solutions to design a proper government support policy to generate higher financial performance. The government also needs to determine precisely whether it will encourage SOEs by increasing its investment in them in the future with the aim of boosting their performance to meet the government's service obligations.

2. LITERATURE REVIEW

2.1 Theoretical Framework

The existence of SOEs is inseparable from government intervention. As the main owner, the government tries to manage SOEs as well. A proper government policy will boost their performance. As the OECD (2016) estimated, of the world's largest 100 firms, 22% are under government control. Hence, the presence of government intervention in the achievement of good performance of SOEs is undeniable.

According to Indonesia's SOE Law Number 19 from 2003, an SOE is a business entity of which all or at least 51% is owned by the Republic of Indonesia through direct investment, with the main objective of pursuing profit. Therefore, SOEs in Indonesia are defined as firms of which the government holds at least 51% of the total shares. These percentages of ownership show the government as the major shareholder of SOEs.

Besides being a shareholder, the government plays the role of a stakeholder. In both roles, the government requires the implementation of good corporate governance of SOEs. As the OECD (2014) explained, SOEs should fulfill the government's mandate to

contribute and reallocate economic development programs through good corporate governance.

As a guide for the interaction between the government and the SOEs, the relationship between them should be clear. This does not mean that the government should intervene in all the SOEs' activities. As the OECD (1998) emphasized, it is necessary to clarify and communicate clearly the relationship between the government and the SOEs, especially regarding government objectives, monitoring, and reporting as well as the measurement of the positions and performance of SOEs' directors. The clear relationship between the government and the SOEs, as the OECD (1998) discussed, includes strengthening financial discipline, concentrating on the core business, and controlling the relationships between the government and the SOEs.

The SOE ownership policy becomes a reference for the government in setting the objectives that SOEs must achieve as well as the regulations that they must implement. The ownership policy also regulates the interaction between the SOEs and their respective stakeholders to communicate their objectives clearly (OECD 2010). The combination of goals that SOEs must achieve becomes a government mandate for SOEs. Government mandates consist of general and specific targets. SOEs should achieve the mandate in a span of time that could be short, medium, or as long as the SOEs exist.

As the OECD (2014) pointed out, the government may interfere in SOEs' capital structure, as their crucial part, by providing government support. The types of government assistance for SOEs include funds to purchase new shares that will increase the government's shares, funds for SOEs that will not affect the government stocks due to public service obligations, or a combination of policies affecting SOEs' liabilities and equity increases.

The Government of Indonesia intervenes in SOEs' capital by providing funds or infrastructures to support their businesses. The Government of Indonesia has provided support for SOEs by injecting funds into their capital, transferring assets to them, and providing financial assistance. The government's direct capital injection is financial backing for SOEs' capital, which increases the government's shares. The government also transfers its infrastructure to SOEs for them to manage as assets. Besides capital injection and the transfer policy, the government provides to SOEs with financial assistance for their business activities.

The OECD (2014) argued that the government should provide support funds for SOEs when they complete government targets in both commercial and non-commercial activities. In other words, the government provides funds as payments for public service obligations that SOEs have completed without taking profit margins as well as managing the balance between debt and SOEs' equity to improve their performance.

The OECD (2014) also concluded that the government is allowed to provide support for SOEs. The scheme of government financial support is parallel to the increase in the government's shares and payments to cover the costs that SOEs incur in the implementation of public service obligations. Furthermore, the government policy is to reduce the interest rate for SOE businesses, both commercial and non-commercial.

Other challenges that SOEs face, as the OECD (2014) stated, in addition to carrying out the government's mandate, are controlling markets at competitive prices and tight funding costs. To solve these problems, the government, as the major shareholder, may assist SOEs in facing their financial constraints by implementing financial assistance programs. The OECD (2014) also emphasized that the government policy to improve the capital structure has a significant impact on SOEs' performance, because it affects their ability to carry out their business activities while maintaining the target of the stakeholders.

The government expects the presence of SOEs in both profitable and unprofitable business activities. For profit-generating activities, SOEs use their revenues to cover the operating costs incurred. However, the operating costs for unprofitable activities are a burden on SOEs' finance. Hence, they need financial support from the government.

SOEs' unprofitable activities generally relate to public service obligations. These activities have a negative impact on SOEs' performance because they must provide the public with services or products but the government does not allow them to make profits. Therefore, SOEs should plan appropriately, run properly, and report all activities to the government when they perform public service activities.

As mentioned by the OECD (2010), when SOEs carry out government mandates to deliver public services, they should focus on the aspects of uncertainty that they may encounter, analyze and calculate the costs accurately, and report all information about budget implications and distribution consequences. Therefore, SOEs need to identify public services and other specific obligations clearly, as these have a significant impact on their performance.

After SOEs have completed the targeted activities as directed in the government mandates, the government evaluates the results based on the reports that the SOEs have submitted. The OECD (2010) emphasized that, to review SOEs' performance effectively, the government must have appropriate and proper material that demonstrates their performance. The government requires a reporting system to evaluate SOEs' performance. Therefore, SOEs needs to initiate a reporting system that discloses all the information related to their activities.

The government might evaluate the performance of SOEs based on their report showing the performance of their activities, both financial and non-financial. The government compares SOEs' performance with the targets and objectives that it set at the beginning. As a result, the government may decide the necessary policy related to the next government target.

2.2 A Review of the Empirical Results on the Impact of Government Support

There are numerous ways for the government to support SOEs in improving their performance. Previous research has examined several types of government support for companies: subsidies, grants, incentives, research and development (R&D) funds, and venture capital. In this section, I review the ways in which government support affects the output differently depending on the various factors.

Most research has aimed to observe the different effects of government support. Lee, Walker, and Zeng (2014) argued that government subsidies have a significant effect on the Chinese stock market. They examined the value relevance of government subsidies on the Chinese stock market and found that subsidies were the most significant for high-performing firms rather than low-performing firms. They argued that government

subsidies for high-performing companies influence investors' decisions because they determine their profits. They also demonstrated that transparent and well-known subsidies have more significant value.

Guo, Guo, and Jiang (2016) reported the same significant impact of government funding. By examining Innovation Fund data for small and medium technology companies, they studied the effects of the Innovation Fund for Small and Medium Technology Enterprises, which is one of the largest government R&D programs supporting the R&D activities of small businesses and medium-sized enterprises in the People's Republic of China (PRC). They found that small and medium-sized technology-based companies with government funding support achieved a higher output than companies without government support. In addition, government programs are more effective and stronger if government support policies change from centralized to decentralized.

Besides research on the effect of government support for R&D, some research has investigated the effect of state control on firms' access to capital. Li, Su, and Yang (2012) examined the effect of state control on capital allocation and investment in the PRC. They conducted an experiment by applying the effect of state control on firms' access to capital in the PRC, where the government controls the equity capital allocation process. They also examined the consequences of this governmental control. They argued that the government is more likely to grant approval to increase the capital structure to SOEs than to non-SOEs. As a result, it has a negative effect on non-SOEs, because the financial restrictions and postponed investment plan affect the firm performance.

Another study, by Hsu and Hsueh (2009), offered an approach to measuring the efficiency of a government-sponsored project in Taipei,China. They found that the efficiency of government-sponsored research and development projects in Taipei,China determined not only the government subsidy but also the firm size and industry.

Despite the fact that some research has shown a positive effect of government support, Boeing (2016) found a different result. He investigated the allocation of the PRC's R&D subsidies and their effectiveness in stimulating business R&D investments for the population of Chinese listed firms between 2001 and 2006. He emphasized that government subsidies decrease the private R&D in the short term but that the impact returns to neutral in the long term.

Alperovych, Hubner, and Lobet (2015) also found a negative effect of government assistance. They examined the implications of the venture capital (VC) investor type, either government or private, on the operating efficiency. Using a sample of 515 Belgian portfolio firms up to 3 years after the investment, they found that a firm with VC backing has low-level productivity and that a government-backed firm has a low level of efficiency.

Guan and Yam (2015) also discovered a negative impact of government incentives. They investigated the effect of Chinese government financial incentives on firms' innovation performance during the nation's initial economic transition period in the mid-1990s. They argued that financial incentives have a negative effect on firms' innovative economic performance. They also showed that all the financial incentives of the government are unrelated to the patents of either high-tech or general firms. They concluded that the government funding policy with the central system has no significant impact on the technological progress of Chinese manufacturing firms and that it would be better for the government to reform the market by encouraging the role of the market.

2.3 A Review of the Empirical Results on Firm Performance

There is an abundance of studies that have investigated the relationship between state ownership and firm performance. This relationship has influenced many empirical studies. It is possible to measure the achievement of a firm's financial performance through profitability ratios. Several ratios capture a firm's financial performance. Brealey (2011) explained that the ROE measures earnings for shareholders; in contrast, the ROA measures income for holders of liabilities and equity compared with total assets. Pratt (2011) argued that the ROA is broader than the ROE because the ROA compares the returns to shareholders and creditors with the total assets and the total resources that shareholders and creditors provide.

Most previous research has been conducted to observe the impact of state ownership on firms' performance but not the impact of government support on the performance of SOEs. Nevertheless, the empirical findings regarding the impact of state ownership on firm performance have varied. The different empirical findings may be due to the different methodology that the studies used to measure firm performance and sample observation. Prior studies on the same observation have used several methods to measure firm performance. Each study obtained different empirical results because of the different methodology.

Numerous studies have measured firm performance using profitability ratios. For example, Sun, Tong, and Tong (2002) observed the relationship between government ownership and all listed companies' performance during the 1994–1997 period based on the PRC's privatization experience. This study demonstrates that government ownership has a positive relationship with firm performance based on performance measured using the market-to-book ratio (MBR) as a proxy for Tobin's Q. Other variables used in this model include state ownership, legal entity ownership, the natural logarithm of operating sales, debt-to-total assets, company locations, and regulated industries.

Lin, Ma, and Su (2009) also conducted research by applying a single ratio measuring firm performance to the PRC's publicly listed firms between 1999 and 2002 to investigate whether corporate governance practices affect production efficiency. They provided evidence that firm efficiency is negatively related to state ownership but positively related to public and employee share ownership. The authors showed that government ownership has a U-shaped relationship with firm efficiency.

According to Hess, Gunasekarage, and Hovey (2008), state ownership has a significant influence on firms' performance if the government holds more than 35% of the total shares. In contrast, state ownership has no significant effect if the government's share percentage is small. They captured firm performance based on a single ratio, Tobin's Q. This research made the same observation as Lin, Ma, and Su (2009); however, the authors used a different methodology. The other variables in this research included firm ownership and specific parameters such as the debt–equity ratio, the natural logarithm of total assets as a proxy for firm size, the annualized standard deviation of the share return for the 24 months preceding the end of the year, and industry dummies.

Furthermore, Gunasekarage, Hess, and Hu (2007) showed that state ownership has a negative relationship with firms' performance. They combined Tobin's Q and the MBR to measure firm performance and made the same argument as Lin, Ma, and Su (2009) that state ownership has a negative effect on corporate performance with a low percentage of government ownership but a positive effect with a high percentage of government ownership. This study examined 1034 companies registered in the PRC for the period 2000 to 2004 and employed variables such as the fraction of shares owned by the state, which it measured as the number of shares held by the state divided by the total number

of shares outstanding, the fraction of shares owned by legal persons, which it measured as the number of shares held by legal persons divided by the total number of shares outstanding, the fraction of shares owned by individual investors, which it measured as the number of shares held by legal persons divided by the total number of shares outstanding, the debt-equity ratio, the firm size as the natural logarithm of the total assets, and the annualized standard deviation of the monthly share return for the 36 months preceding the end of the year.

Wei and Varela (2003) obtained the same empirical results regarding firms' performance. They investigated relationships with state ownership on the same observations as the newly privatized PRC during the period 1994–1996 using a combination of Tobin's Q and the monthly stock return (MSR) as a monthly average of arithmetic stocks to measure the company performance. This study provided evidence that state ownership has a negative relationship with firms' performance using Tobin's Q ratio as a measure but a positive relationship when using the MSR as a measure.

Yu (2013) and Mao (2015) used a combination of Tobin's Q ratio and others. Both of these studies combined Tobin's Q, the ROA, and the ROE to measure the performance of listed companies in the PRC. Yu (2013) established a model based on the ROA, the ROE, Tobin's Q, state ownership, directors' compensation, board ownership, the logarithm of the board salary, the logarithm of assets as the firm size, and the debt ratio. The author believed that state ownership has a U-shaped relationship with companies' performance. This study also demonstrated that a high percentage of government stock ownership has a positive influence on the capital structure due to state support.

Using a model that was broadly identical to Yu's (2013) model, Mao (2015) reached the same conclusion that state ownership has a negative effect on firm performance, because state owners are concerned only with non-financial objectives, such as political targets, rather than financial targets. These findings were based on Chinese public listed firms' performance, which the author measured using the ROA, the ROE, Tobin's Q, state ownership as the percentage of shares owned by the government, institutional ownership as the percentage of shares owned by institutions, leverage computed as the total debt to total assets, the size of the firm as the logarithm of the total assets, and the total value of tangible assets.

The ROA, the ROS, and Tobin's Q are closely related to firm performance. Le and Chizema (2011) completed the previous studies by adding the ROS instead of Tobin's Q and the ROA to show that the effect of state ownership on firms' value and performance is moderate. In addition, state ownership has a significant effect on firm performance, but the effect is moderate when measuring the firm value and performance together. However, this study shows that low-level government ownership has a negative effect on corporate value. Furthermore, high-level government ownership has a positive effect on the value of the company if the percentage of government stocks is at a high level. This study was based on the performance of listed companies in the PRC according to Tobin's Q, the ROA, and the ROS. The other variables in this model were state ownership, the firm size as measured using the employee logarithm, the debt to equity ratio, and the industry type. Moreover, this study showed that government intervention may improve companies' performance in the short term but that long-term government intervention has no impact on avoiding the impairment of corporate value.

Jiang, Laurenceson, and Tang (2008) believed that the government share percentage has a positive impact on firm performance. This research employed variables such as the sum of the state share proportion and the legal person share proportion, the ratio of state shares, the sum of state and legal person shares, the size of the firm measured using the logarithm of total assets, and the industry as vector dummy variables and the

location as a dummy variable. The authors empirically examined firm performance based on the ROA, ROE, ROS, and REITA as the ratio of earnings before interest minus taxes to assets (REITA) applied to 794 samples out of the total 821 listed companies on the Shanghai Stock Exchange as of the 2004 year end.

Chen, Firth, and Xu (2009) developed a complete model to investigate the efficiency of state ownership compared with private ownership of listed companies and the efficiency of state ownership forms only on the PRC's listed companies. Instead of the ROA, the ROS, and Tobin's Q, they examined the cash flow return on assets (CFOA), which they determined using the operating cash flows against the average book value of total assets. They argued that the efficiency level of firms varies among shareholder types. They also employed companies' productivity by sales per employee (SEMP), which they described as the net sales divided by the number of employees, and the assets per employee (AEMP), which they determined as the average book value of total assets divided by the number of employees.

3. DATA AND METHODOLOGY

The main objective of this study is to answer my research question by developing a regression model to estimate the relationship between government support and firm performance. The empirical findings of the previous studies have shown a varied relationship between government support and firm performance. Therefore, in this study, I try to measure the impact of financial government support on SOEs' financial performance.

In this paper, I employ ordinary least square (OLS) multiple regression analysis to investigate and present evidence of SOEs' performance as an empirical model of government support's impact. I use the firm-level panel data for six financial periods from 2010 through 2015. This analysis employs a firm fixed-effect model to capture time-invariant unobservable factors and control the omitted-variable bias (OVB) because of unobservable factors that may correlate with variables in the equation. I also apply year fixed effects to capture unobservable factors that commonly occur for all firms. Moreover, I adopt a clustered standard error (heteroskedasticity- and autocorrelation-consistent standard error/HAC-clustered SE) to solve the serial correlation problem that arises in panel data and to ensure the robustness of the model.

3.1 Data

This paper aims to investigate the effect of government support on SOEs' performance by utilizing a panel data set of all Indonesia's SOEs from 2010 through 2015. The number of SOEs has fluctuated each year, because some SOEs have closed due to bankruptcy and the government has newly formed other SOEs. The detailed numbers of Indonesia's SOEs are 145 SOEs in 2010, 2011, and 2012, 144 SOEs in 2013, 125 SOEs in 2014, and 122 SOEs in 2015. Indonesia's SOEs operate in 31 industries (Ministry of Finance of Republic Indonesia 2016).

I consider a business entity as an Indonesian SOE if the government holds at least 51% of the shares or the government is the major shareholder. As SOEs have an influential part in developing Indonesia's economy, the government as a major shareholder has the policy to strengthen the SOEs by providing support. In 2015, the government injected funds that reached Rp64.88 trillion into the capital of 43 SOEs (Ministry of Finance of Republic Indonesia 2016). This direct capital injection policy shows an upward trend over

five years. The expected result from this policy is real acts from all Indonesia's SOEs to develop both infrastructure and non-infrastructure sectors.

The empirical model in this study combines SOEs' financial statements, government investment annual reports, and other significant data. I obtain SOEs' financial statements from each SOE and from Indonesia's Ministry of SOEs.

The main variable of interest in this study is government support for SOEs. Government support refers to financial backing that the government gives to SOEs to enable them to achieve the government's goals. The types of government support in this study consist of the value of direct capital injection into SOEs, the transfer of government infrastructure to SOEs, and government assistance. Government capital injection refers to funds provided for SOEs to support their business activities, while the transfer of government infrastructure is infrastructure that the government has built and then hands over to SOEs for them to manage as their assets. Both government capital injection and government infrastructure transfers increase the government's capital in SOEs. However, government assistance would not increase the government's capital, because it relates to funds or infrastructure that the government provides for SOEs to use to assist in their operations but excludes firm assets and will not increase the government's shares.

The variables and the explanation of the methodology that I use to analyze the impact of government support on the performance of SOEs in this study are the following.

3.2 Dependent Variables

The variable perf is the performance of SOE i at time t. To measure SOEs' performance, I use the ROA, ROE, and ROS. I formulate the ROA as the net comprehensive income divided by the total assets. I use the ROA to show not only SOEs' profitability performance but also the efficiency of assets in generating profit. I measure the ROE as the net comprehensive income divided by the total equity. I utilize the ROE to demonstrate the profitability and return to the government capital. I obtain the ROS from the earnings before interest and tax divided by the total sales. I use the ROS to measure profitability and productivity, which the sales level captures.

This study employs the ROA and ROE to analyze a panel data set of all Indonesia's SOEs. As public enterprises, Indonesia's SOEs not only are involved in non-commercial activity or public service obligations to meet people's demand but also pursue profits. Hence, the study uses the ROA to measure the effectiveness of government support for SOE performance, which it measures as the rate of return on the total assets, while it uses the ROE to measure the rate of return on the government's equity as a shareholder. Thus, it applies the ROE to measure SOEs' performance as public enterprises to measure their performance using the rate of return on government capital.

3.3 Independent Variables

The variable *log_govsupp* is the natural logarithm of government support. I measure government support as the sum of direct capital injected into SOEs, the transfer of government infrastructure to SOEs, and government assistance. To provide the real value of government support, I divide government support by the consumer price index for each year.

The variable *npfm* is the net profit margin, which I calculate from the net comprehensive income divided by the total sales. I use this variable to demonstrate the profitability of SOEs.

The variable *tato* is the total asset turnover, which I measure as the total sales divided by the total assets. I use it to gauge the productivity and efficiency of SOEs' assets.

The variable *wcto* is the working capital turnover, which I obtain by dividing the total sales by the total equity. I use this variable to show the efficiency and productivity of SOEs' equity.

The variable *das* is the debt–asset ratio, which I formulate as the total liability divided by the total assets. Therefore, this variable represents SOEs' leverage ratio.

The variable *der* is the debt–equity ratio, which I calculate as the total liability divided by the total equity. Like the variable *das*, this variable shows SOEs' leverage level.

The variable *gvt_perc* is the percentage of state ownership, which shows the percentage of common shares held by the government. It is possible to categorize firms as SOEs if the government holds more than 51% of the total shares.

The variable *size* shows the firm size, which I measure as the natural logarithm of the total assets. Table 1 reports the descriptive statistics for all the variables:

Table 1: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev	Min.	Max.
ROA	818	.06551	.47992	−.64923	12.563
ROE	821	1.2353	34.396	−11.540	985.28
ROS	817	.27020	4.8830	−13.103	132.16
log_govsupp	852	1.6323	3.3752	−13.103	13.06
Npfm	816	.18826	4.9850	−26.415	132.16
Tato	819	.84611	2.7723	−26.415	49.354
Wcto	822	2.2232	10.387	−128.65	139.25
Das	821	1.3780	10.772	−128.65	227.49
Der	824	2.7009	22.639	−167.72	554.15
gvt_perc	852	89.645	22.326	0	100
Size	821	9.5744	2.2673	3.1352	16.139

Note: The table is based on STATA output.

4. EMPIRICAL MODEL, RESULT, AND DISCUSSION

4.1 Empirical Model

Below is the regression equation that I use to estimate the impact of government support on SOEs' performance:

$$perf_{it} = \beta_0 + \beta_1 log\_govsupp_{it} + \beta_2 npfm_{it} + \beta_3 tato_{it} + \beta_4 wcto_{it} + \beta_5 das_{it} + \beta_6 der_{it} + \beta_7 gvt\_perc_{it} + \beta_8 size_{it} + \beta_9 Z_i + \beta_{10} T_t + \mu_{it}$$

where

i: firm
t: year
Z_i: *firm fixed effects*
T_i: *year fixed effects*
μ_{it}: *error term*
β_0: *intercept*

4.2 The Impact of Government Support on SOEs' Performance Measured Using the Return on Assets Ratio

Using the regression equation model above, Table 2 provides the regression result of SOEs' performance, which I measure using the ROA. In the first model, the regression shows the simplest regression model without firm fixed effects and clustered standard errors. In the second model, the regression contains firm fixed effects and clustered standard errors.

The result of the regression in Table 2 model 1 indicates that government support has a positive and significant correlation with firm performance as measured using the ROA. It reveals that government support has a positive and significant correlation with the net comprehensive income and total assets. These findings mean that higher government support will improve the performance of SOEs. Hence, government support is likely to improve SOEs' performance. In other words, government support shows a positive relationship with the ROA, which shows the rate of return on investment to shareholders and creditors.

The variable *npfm*, the net profit margin, has a positive and significant correlation. Intuitively, the higher profit raises SOEs' performance. Nevertheless, the variable *wcto*, which shows that the productivity level of equity drives the sales, and the variable *gvt_perc*, which indicates the government share percentage, have a negative relationship with the ROA. This result implies that an increase in the sales level compared with the equity has a negative correlation with the ROA, because the ROA only measures the net return on assets. An increase in government shares also has a negative correlation with the ROA. These findings, to some extent, are consistent with those of Hess and Hu (2007) and Wei and Varela (2003), who provided evidence of the negative correlation between state ownership and firm performance. The results of the regressions in model 1, although apparently robust, do not include firm fixed effects and clustered standard errors. Hence, this set of regression results may suffer from biases. To overcome this problem, I add the firm fixed effects and clustered standard errors to regression model 2.

**Table 2: Regression Coefficients for the Impact of Government Support
on the Return on Assets**

Variables	Regression Analyses	
	(1)	**(2)**
Dependent variable	*ROA*	*ROA*
Estimation method	OLS	FE
log_govsupp	.00404**	.00489
	(.00174)	(.00367)
Npfm	.00694***	.00513***
	(.00149)	(.00130)
Tato	.25688***	.26409***
	(.03816)	(.03317)
Wcto	−.00308	−.00189**
	(.00206)	(.00079)
Das	−.04375***	−.04904***
	(.01055)	(.00908)
Der	.00339***	.00309***
	(.00095)	(.00054)
gvt_perc	−.00137	.00028
	(.00088)	(.00345)
Size	.01262***	−.09407
	(.00357)	(.09549)
Constant	−.11381	.71495
	(.10548)	(1.1369)
Firm fixed effect	No	Yes
Year fixed effect	Yes	Yes
HAC (clustered) SEs (within firm)	No	Yes
n	813	813
R^2	0.7749	0.8710

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Robust standard errors in parentheses.

To control the unobservable firm-specific characteristics that vary across firms but do not change over time within each firm, I add firm fixed effects to regression model 2. After adding the firm fixed effects, the significance of the variable government support in model 1 disappears. In other words, the regression results in model 1 omit unobservable firm-specific characteristics, which causes biases in the regression results. Regression model 2 provides evidence that government support does not have a significant effect on SOEs' performance after adding firm fixed effects and clustered standard errors.

To treat the potential correlation of the error term over time within a firm, I also employ heteroskedasticity- and autocorrelation-consistent (HAC) standard errors or clustering in regression model 2. Using HAC standard errors, the clustered standard errors in model 2 are larger than those in model 1 and provide evidence that the errors are correlated over time.

In regression 2, government support has a positive but not significant effect on the SOEs' performance. Providing more rigorous results and minimizing the omitted variable bias, the regression in model 2 reveals that government support does not have a significant effect on SOEs' performance, which I measure using the ROA, after employing firm fixed effects and clustered standard errors.

These findings show that government support does not provide a profit return for the government as the main shareholder. This suggests that the government might provide support for public service obligations or non-commercial activities. However, SOEs achieve the governments' mandate to engage in non-commercial activities or public service obligations in which SOEs must not take profit from the activities.

The coefficient of variables *npfm*, *tato*, and *der* have a positive and significant correlation with the ROA at the 1% level, which means that the higher profit that the variable *npfm* captures raises SOEs' performance as measured using the ROA. The higher productivity and efficiency of SOEs' assets, as showed by the variable *tato*, affect SOEs' performance. SOEs' leverage, as the variable *der* indicates, has a positive and significant correlation with the ROA, which means that an increase in SOEs' leverage improves SOEs' performance.

However, the other SOEs' leverage ratio, which the variable *das* represents, has a negative and significant relationship with the ROA. It suggests that an increase in the assets financed by debt decreases the firm performance significantly. The variable *wcto* also has a negative and significant correlation with the ROA, which means that an increase in the sales level compared with the equity will decrease SOEs' performance, due to the ROA not measuring sales performance.

4.3 The Impact of Government Support on SOEs' Performance Measured Using the Return on Equity Ratio

Table 3 provides the regression result of SOEs' performance measured using the ROE. The first model is the simplest regression model without firm fixed effects and clustered standard errors. The second model is the regression model with firm fixed effects and clustered standard errors.

Table 3 shows the government support variable regressed against the ROE variable. The result in model 1 shows that government support has a positive and significant correlation with firm performance as measured using the ROE. It demonstrates that government support has a positive and significant correlation with net comprehensive income and total equity.

In regression 1, the variables *npfm* and *der* have a positive and significant correlation with the ROA. Furthermore, I find that the variables *wcto, gvt_perc, das,* and *tato* have a negative relationship with the ROE. SOEs' size as a proxy for the logarithm of total assets also has a negative and significant relationship with the ROE. This result means that bigger SOEs tend to have a negative relationship with SOEs' performance based on the return to shareholders. However, regression model 1 does not employ firm fixed effects and clustered standard errors, so the result may suffer from omitted variable bias.

Regression model 2 employs firm fixed effects and clustered standard errors. The result shows that government support has a negative relationship with the ROE. This result provides evidence that government support does not have any statistically significant effect on SOEs' performance. This finding is consistent with the empirical result that Guan and Yam (2015) obtained. The coefficients of the variable *wcto* also have a

negative correlation with the ROE, which implies that an increase in the sales level compared with the equity has a negative impact on the ROE. The debt–equity ratio, which variable *der* represents, has a positive correlation with the ROE that is significant at the 1% level, which means that an increase in SOEs' equity–debt finance raises the SOEs' performance based on the ROE.

Table 3: Regression Coefficients for the Impact of Government Support on the Return on Equity

	Regression Analyses	
Variables	**(1)**	**(2)**
Dependent variable	*ROE*	*ROE*
Estimation method	OLS	FE
log_govsupp	.36749**	−.15735
	(.14387)	(.28972)
Npfm	.14179*	.09403
	(.07788)	(.08060)
Tato	−.03072	−.26791
	(.17676)	(.26525)
Wcto	−.99215**	−1.0498**
	(.41527)	(.42604)
Das	−.06667	−.06748
	(.04311)	(.05654)
Der	1.6139***	1.7294***
	(.42479)	(.38690)
gvt_perc	−.11826**	−.10317
	(.06016)	(.08937)
Size	−1.3479***	−3.4435
	(.37583)	(3.3020)
Constant	21.816**	40.745
	(8.2610)	(36.665)
Firm fixed effect	No	Yes
Year fixed effect	Yes	Yes
HAC (clustered) SEs (within the firm)	No	Yes
n	813	813
R^2	0.7710	0.8595

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Note: Robust standard errors in parentheses.

4.4 The Impact of Government Support on SOEs' Performance Measured Using the Return on Sales Ratio

Table 4 provides the regression result of SOEs' performance measured using the ROS. In the first model, the regression is the simplest regression model without firm fixed effects and clustered standard errors. The second model contains firm fixed effects and clustered standard errors.

Table 4: Regression Coefficients for the Impact of Government Support on Return on Sales

Variables	Regression Analyses	
	(1)	(2)
Dependent variable	*ROS*	*ROS*
Estimation method	OLS	FE
log_govsupp	−.00324	−.00375
	(.00804)	(.00881)
Npfm	.96657***	.98684***
	(.03886)	(.02838)
Tato	−.01729	.00269
	(.01955)	(.00307)
Wcto	−.00008	−.00303
	(.00138)	(.00333)
Das	.00479	−.00011
	(.00409)	(.00130)
Der	−.00032	.00218
	(.00094)	(.00250)
gvt_perc	−.00186	.00117
	(.00186)	(.00128)
Size	−.01541*	−.00587
	(.00816)	(.05199)
Constant	.43919*	.03923
	(.25472)	(.46731)
Firm fixed effect	No	Yes
Year fixed effect	Yes	Yes
HAC (clustered) SEs (within the firm)	No	Yes
n	813	813
R^2	0.9732	0.9821

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Robust standard errors in parentheses.

The regression in Table 4 reports the regression model results using the ROS to measure SOEs' performance. In this regression, government support is regressed against the ROS. Using a simple OLS in model 1, government support has a negative correlation with firm productivity, which the ROS captures. It reveals that government support has a negative correlation with sales and earnings before interest and tax. The variables *tato, wcto, der,* and *gvt_perc* have a similar correlation with the variable *log_govsupp*. Moreover, the variable *size* has a negative and significant correlation with the ROS at the 10% significance level.

The variables that show a positive relationship with the ROS in model 1 are *npfm* and *das.* The variable *npfm* has a positive and significant relationship with the ROS, revealing that the net profit margin has a positive and significant correlation with the SOE performance indicator measured using the ROS. The variable *das* has a positive but insignificant correlation with the ROS, which means that an increase in SOEs' leverage effects a better SOE performance. However, this model does not employ firm fixed effects and clustered standard errors; consequently, the findings may suffer from omitted variable bias.

After employing the firm fixed effects and clustered standard errors, the result of regression model 2 indicates that government support has a negative and insignificant correlation with the ROS. However, the variable *npfm* shows a positive and significant correlation with the ROS, because it boosts the return to sales performance. This result, which is consistent with the result in model 1, suggests that the net profit margin raises SOEs' performance measured using the ROS. The coefficients of the variables *tato*, *der*, and *gvt_perc* have a positive but insignificant correlation with the ROS. In contrast, the variables *wcto*, *das*, and *size* have a negative and insignificant correlation with the ROS.

5. ROBUSTNESS CHECKS

5.1 Autocorrelation-Consistent Standard Errors

I check the robustness of each regression model by scrutinizing the coefficient result and the significance level of the empirical result between the dependent and the independent variables in the regression model that I demonstrated in the previous section. Moreover, I test the model by applying simple OLS regression and regression with firm and year fixed effects and clustered standard errors (heteroskedasticity- and autocorrelation-consistent standard errors/HAC-clustered SE).

5.2 Lagged Regression Models for the Government Support Variable

Table 5 presents the results of the relationship between government support and SOEs' performance using the fixed-effect model, autocorrelation-consistent standard errors, and the lagged effect of government support. Applying the lagged effect confirms the effect of government support on SOEs' future performance after they have received the support.

The empirical findings in Table 5 are broadly consistent and indicate the robustness of the empirical results of all the different specifications: government support does not have a significant correlation with SOEs' financial performance. Hence, these findings do not provide any argument to support the previous studies that found a significant relationship between government support and firms' performance. My empirical findings are somewhat consistent with the findings of Guan and Yam (2015).

**Table 5: Regression Coefficients for the Impact of Government Support on SOEs'
Performance with a Lagged Effect**

Variables	Regression Analyses		
	(1)	(2)	(3)
Dependent variable	*ROA*	*ROE*	*ROS*
Estimation method	FE	FE	FE
L. *log_govsupp*	.00327	.15523	.00141
	(.00359)	(.20557)	(.00465)
Npfm	.00470***	.05197	.99266***
	(.00118)	(.04513)	(.02588)
Tato	.26129***	−.31875	.00047
	(.03545)	(.30874)	(.00393)
Wcto	−.00205**	−1.0821**	−.00084
	(.00078)	(.45278)	(.00121)
Das	−.04966***	−.06768	−.00031
	(.00891)	(.06188)	(.00108)
Der	.00337***	1.7648***	.00066
	(.00054)	(.37779)	(.00085)
gvt_perc	−.00050	−.11488	.00078
	(.00457)	(.10508)	(.00189)
Size	−.13674	−3.9177	−.02472
	(.13006)	(3.8375)	(.05301)
Constant	1.3897	49.537	.26746
	(1.6181)	(46.977)	(.76528)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
HAC (clustered) SEs (within firm)	Yes	Yes	Yes
n	669	669	669
R^2	0.8833	0.8778	0.9884

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: Robust standard errors in parentheses.

6. CONCLUSION

This paper aimed to examine the impact of government support on the performance of Indonesia's SOEs. The result is important for the government, because it shows empirically the impact of the government's funding on SOEs' financial performance. By examining the government support, which combines direct capital injection into SOEs, the transfer of the government's infrastructure to SOEs, and government assistance, this paper provides unique findings regarding the impact of government support on SOEs' performance.

This study used a panel data set of all Indonesia's SOEs from 2010 through 2015 and employed firm fixed effects to measure unobservable firm-specific characteristics that vary across firms but do not change over time within each firm. It also adopted year fixed effects to capture unobservable factors that are constant and occur commonly for all firms but vary over time. Moreover, it used clustered standard errors (heteroskedasticity- and autocorrelation-consistent standard errors/HAC-clustered SE) to solve the serial correlation problem that arises in panel data and to ensure the robustness of the model.

Without firm fixed effects and clustered standard errors, government support has a positive and significant correlation with SOEs' performance, using the ROA and ROE as measures. However, by applying the firm fixed-effect model and HAC-clustered standard errors, the study shows that the government support for the SOEs did not have a significant effect on SOEs' financial performance. These findings are somewhat consistent with the result that Guan and Yam (2015) obtained: the government funding policy has no significant impact on the technological progress of Chinese manufacturing firms and it is better for the government to reform the market by encouraging the role of the market.

Government support is more likely to increase SOEs' assets but does not create financial benefits for them. SOEs might involve non-commercial activity or public service obligations to meet people's demand and execute the government's mandate. As a result, government support has no impact on SOEs' performance.

In spite of the non-significant relationship between government support and financial performance, this result still has policy implications. The government should take into account its support for SOEs, implying that the government needs to consider alternative solutions to design a proper government support policy and generate higher financial performance.

To design the government support policy, clear communication between the government and the SOEs is necessary, especially in determining the policy direction of the government support. The government also needs to determine precisely whether it will encourage SOEs by increasing its investment in them in the future with the aim of boosting their performance to meet the government's service obligations. In conclusion, effective communication between the government and the SOEs about the government's objectives might support the effectiveness of the government support for SOEs' performance.

The results of this paper are necessary for formulating the government support policy compared with SOEs' financial performance measurement. By providing an empirical model for measuring the relationship between government support and SOEs' financial performance, this study also contributes to the research on SOEs.

Future research can explore government support's effect on SOEs for a larger range of SOEs and a longer time period of observations and apply more variables. Moreover, future study can investigate the impact of financial government support on SOEs' financial and non-financial performance.

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